WHAT IS CLAIMED IS:

1. A method for registering corresponding intensity images comprising:

providing a first intensity image;

providing a second corresponding intensity image;

separately performing an edge enhancement operation on the first intensity image and the second intensity image;

separately performing a noise removal thresholding operation on the first intensity image and the second intensity image;

separately transforming the first intensity image and the second intensity image using a Fourier transform;

computing a coherence function using first intensity image and the second intensity image;

transforming the coherence function using an inverse Fourier transform;

performing a magnitude operation on the transformed coherence function;

calculating a confidence value based on the magnitude operation; and

determining the acceptability of the correspondence between the first intensity image and the registration using the computed confidence value.

2. The method of Claim 1 further comprising providing the first intensity image and the second intensity image using a digital holographic imaging system.

3. The method of Claim 1 wherein calculating the confidence value utilizes at least one identified coherent peak.

4. The method of Claim 1 wherein calculating the confidence value further comprises determining the difference in strength between a first coherent peak and a second peak.

5. A method for registering holographic images comprising:

providing a first holographic image and a second corresponding holographic image;

separately transforming the first holographic image and the second holographic image using a Fourier transform;

separately performing a sideband extraction operation on the resulting first holographic image and the second holographic image;

separately filtering the resulting the first holographic image and the second holographic image using a bandpass filter;

separately transforming the resulting first holographic image and the second holographic image using an inverse Fourier transform;

separately performing a magnitude operation on the resulting first holographic image and the second holographic image;

separately performing a noise removal thresholding on the resulting first holographic image and the second holographic image;

separately transforming the resulting first holographic image and the second holographic image using a Fourier transform;

calculating a coherence function of the resulting first holographic image and the second holographic image;

transforming the coherence function using an inverse Fourier transform;

performing a magnitude operation on the resulting transformed coherence function;

calculating a confidence value based on the magnitude operation; and

determining the acceptability of the correspondence between the first holographic image and the second holographic image based upon the confidence value.

6. The method of Claim 5 further comprising providing the first holographic image and the second holographic image using a digital holographic imaging system.

7. The method of Claim 5 wherein calculating the confidence value utilizes at least one identified coherent peak.

8. The method of Claim 5 wherein calculating the confidence value further comprises determining the difference in strength between a first coherent peak and a second peak.

9. A method for registering holographic images comprising:

providing a first holographic image and a second corresponding holographic image;

separately transforming the first holographic image and the second holographic image using a Fourier transform;

separately performing a sideband extraction operation on the resulting first holographic image and the second holographic image;

separately filtering the resulting the first holographic image and the second holographic image using a low pass filter;

separately transforming the resulting first holographic image and the second holographic image using an inverse Fourier transform;

separately performing a phase operation on the resulting first holographic image and the second holographic image;

separately performing a phase-aware edge enhancement operation on the resulting first holographic image and the second holographic image;

separately performing a noise removal thresholding on the resulting first holographic image and the second holographic image;

separately transforming the resulting first holographic image and the second holographic image using a Fourier transform;

calculating a coherence function of the resulting first holographic image and the second holographic image;

transforming the coherence function using an inverse Fourier transform;

performing a magnitude operation on the resulting transformed coherence function;

calculating a confidence value based on the magnitude operation; and

determining the acceptability of the correspondence between the first holographic image and the second holographic image based upon the confidence value.

10. The method of Claim 9 further comprising providing the first holographic image and the second holographic image using a digital holographic imaging system.

11. The method of Claim 9 wherein calculating the confidence value utilizes at least one identified coherent peak.

12. The method of Claim 9 wherein calculating the confidence value further comprises determining the difference in strength between a first coherent peak and a second peak.

13. A method for registering holographic images comprising:

providing a first holographic image and a second corresponding holographic image;

separately transforming the first holographic image and the second holographic image using a Fourier transform;

separately performing a sideband extraction operation on the resulting first holographic image and the second holographic image;

separately filtering the resulting the first holographic image and the second holographic image using a bandpass filter;

calculating a coherence function of the resulting first holographic image and the second holographic image;

transforming the coherence function using an inverse Fourier transform;

performing a magnitude operation on the resulting transformed coherence function;

calculating a confidence value based on the magnitude operation; and

determining the acceptability of the correspondence between the first holographic image and the second holographic image based upon the confidence value.

14. The method of Claim 13 further comprising providing the first holographic image and the second holographic image using a digital holographic imaging system.

15. The method of Claim 13 wherein calculating the confidence value utilizes at least one identified coherent peak.

16. The method of Claim 13 wherein calculating the confidence value further comprises determining the difference in strength between a first coherent peak and a second peak.

17. A method for registering holographic images comprising:

providing a first holographic image and a second corresponding holographic image;

separately transforming the first holographic image and the second holographic image using a Fourier transform;

separately performing a sideband extraction operation on the resulting first holographic image and the second holographic image;

separately filtering the resulting the first holographic image and the second holographic image using a bandpass filter;

calculating the conjugate product of the resulting first holographic image and the second holographic image;

transforming the conjugate product using an inverse Fourier transform;

performing a magnitude operation on the resulting transformed conjugate product;

calculating a confidence value based on the magnitude operation; and

determining the acceptability of the correspondence between the first holographic image and the second holographic image based upon the confidence value.

18. The method of Claim 17 further comprising providing the first holographic image and the second holographic image using a digital holographic imaging system.

19. The method of Claim 17 wherein calculating the confidence value utilizes at least one identified coherent peak.

20. The method of Claim 17 wherein calculating the confidence value further comprises determining the difference in strength between a first coherent peak and a second peak.

21. A method for registering holographic images comprising:

providing a first holographic image and a second corresponding holographic image;

separately transforming the first holographic image and the second holographic image using a Fourier transform;

separately performing a sideband extraction operation on the resulting first holographic image and the second holographic image;

separately filtering the resulting the first holographic image and the second holographic image using a bandpass filter;

calculating the conjugate product of the resulting first holographic image and the second holographic image;

transforming the conjugate product using an inverse Fourier transform;

performing a magnitude operation on the resulting transformed conjugate product; and

performing an integer translation and subpixel modeling operation on the resulting magnitude image.

22. The method of Claim 21 further comprising providing the first holographic image and the second holographic image using a digital holographic imaging system.

23. A method for registering a test holographic image and a reference holographic image in a digital holographic imaging system comprising:

providing a test sideband from the test image and a reference sideband from the reference image;

separately filtering the test sideband and the reference sideband using a bandpass filter;

calculating the conjugate product of the resulting test sideband and reference sideband;

transforming the conjugate product using an inverse Fourier transform;

performing a magnitude operation on the resulting transformed conjugate product; and

performing an integer translation and subpixel modeling operation on the resulting magnitude image.

24. The method of Claim 23 further comprising providing the test holographic image and the reference holographic image using a digital holographic imaging system.

25. A method for comparing corresponding holographic images comprising:

obtaining a first holographic image;

obtaining a second holographic image corresponding to the first holographic image;

comparing the first holographic image and the second holographic image and obtaining a first difference image description;

obtaining a third holographic image corresponding to the second holographic image;

comparing the second holographic image and the third holographic image and obtaining a second difference image description; and

comparing the first difference image and the second difference image description.

26. The method of Claim 25 further comprising comparing the first holographic image, the second holographic image and the third holographic image in the frequency domain.

27. The method of Claim 25 further comprising comparing the first holographic image, the second holographic image and the third holographic image in the spatial domain.

28. A method for generating a difference between a first complex image and a second corresponding complex image comprising:

converting the first complex image and the second complex image to an amplitude representation; and

computing the magnitude of the difference between the resulting amplitude representations.

29. A method for generating a phase difference between a first complex images and a corresponding second complex image comprising:

converting the first complex image and the second complex image to a first phase image and a second phase image; and

computing the effective phase difference between the first phase image and the second phase image.

30. A method for generating a difference between first complex image and a second corresponding complex image comprising:

subtracting the first complex image and the second complex image in the complex domain; and

computing the amplitude of the resulting complex difference.

31. A method for determining common differences between difference images in a digital holographic imaging system comprising:

thresholding a first difference image and a second difference image; and

shifting one of the thresholded images by a selected amount such that the common differences of the both difference images are represented by a logical AND of the shifted thresholded image and the unshifted thresholded difference image.

32. A method for determining common differences between difference images in a digital holographic imaging system comprising:

shifting one of the difference images by a selected amount;

thresholding the shifted difference image; and

computing the common differences by performing a logical-AND of the shifted unthresholded image and the shifted thresholded image.

33. A method for determining common differences between two corresponding difference images in a digital holographic imaging system comprising:

shifting the first difference image by a selected amount;

combining the shifted image with the second image; and

thresholding the combined image.